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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ATSUSHI WATANABE and KAZUNORI BAN

Appeal 2009-001084
Application 10/692,801
Technology Center 3600

Decided:¹ June 2, 2009

Before WILLIAM F. PATE, III, LINDA E. HORNER, and
KEN B. BARRETT, *Administrative Patent Judges*.

BARRETT, *Administrative Patent Judge*.

DECISION ON APPEAL

¹ The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

STATEMENT OF THE CASE

Atsushi Watanabe and Kazunori Ban (Appellants) seek our review under 35 U.S.C. § 134 of the final rejection of claims 1-46. We have jurisdiction under 35 U.S.C. § 6(b).

SUMMARY OF THE DECISION

We AFFIRM.

THE INVENTION

Appellants' claimed invention pertains to a material handling system utilizing two robots to convey objects from one process to another. (Spec. 3.) Claim 1, reproduced below, is representative of the subject matter on appeal.

1. An object conveying system for conveying objects from a first process to a second process, comprising:

a first robot having an articulated arm and a hand at a distal end of the arm, said hand holding and taking out a container containing objects positioned therein from the first process and conveying and positioning the held container using said arm to a predetermined position; and

a second robot holding and taking out an object contained in the container held by said hand of said first robot and conveying the held object to the second process, said predetermined position being within an operation range of said second robot.

THE REJECTIONS

The Examiner relies upon the following as evidence of unpatentability:

Nelson US 6,723,174 B2 April 20, 2004

The following Examiner's rejections are before us for review:

1. Claims 1-46 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite because of the phrase "container containing objects positioned therein from the first process";
2. Claims 1, 2, 12, and 13 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for reciting process steps within apparatus claims; and
3. Claims 1-46 are rejected under 35 U.S.C. § 102(b) as being anticipated by Nelson.

ISSUES

Appellants do not address the merits of the first indefiniteness rejection. (App. Br. 9; Reply Br. 3.) Thus, the first point of contention for our consideration pertains to the second indefiniteness rejection. The Examiner concluded that independent claims 1, 2, 12, and 13 each recite process steps within an apparatus claim, and rejected those claims as indefinite. (Ans. 3.) The Appellants respond that those claims do not contain process steps, but properly recite conveying systems using permissible functional language. (App. Br. 15; Reply Br. 5-6.) Therefore, the first issue on appeal is:

Do the system claims 1, 2, 12, and 13 contain process limitations that render those claims indefinite?

The next issue before us concerns the rejection of claims 1-46 as anticipated by Nelson. The Examiner concluded that the “articulated arm” recited in Appellants’ claims encompasses an arm having a telescoping or sliding joint, and found that Nelson’s engager actuator 912 constitutes such an arm. (Ans. 10.) Appellants argue that the broadest reasonable construction of “articulated arm” does not encompass a structure that moves only longitudinally, like Nelson’s actuator. (Reply Br. 4.) Therefore, the second issue before us is:

Is an actuator that moves only longitudinally encompassed within the scope of the recited “articulated arm”?

FINDINGS OF FACT

We find that the following enumerated findings are supported by at least a preponderance of the evidence.

1. The ordinary meaning of the word “articulate” includes “[c]onsisting of sections united by joints; jointed.” THE AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE (4th ed. 2000).
2. The ordinary meaning of the word “arm” includes “[a] part similar to a human arm, such as the forelimb of an animal or a long part projecting from a central support in a machine.” *Id.*
3. Figure 2 of Appellants’ Specification is reproduced below:

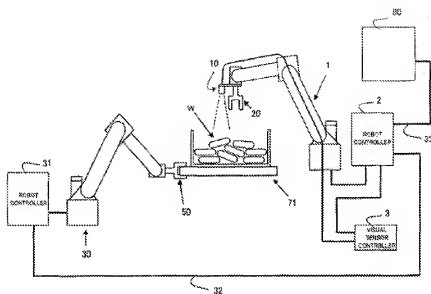


Figure 2 “is a schematic view showing an object conveying system according to a first embodiment of [Appellants’] invention.” (Spec. 9.)

4. Appellants’ Specification states: “FIG. 2 shows an object conveying system according to a first embodiment of this invention, which, instead of the double housing robot 1 used in the system shown in FIG. 1, comprises an articulated robot 1 similar to the robot 30 shown in FIG. 1.” (Spec. 11.)

5. Figures 1 and 5 of the Specification also depict robots 1 and 30. (Spec. 10-11, 21-22.) The Specification describes those figures as depicting embodiments of Appellants’ invention. (*Id.* at 9, 10, 21.)

6. Nelson, referring to figures 32-37, states:

Each of the transfer robots 970 has an articulated arm 974, and an end effector 976 on the end of the arm 974, with the end effector 976 adapted to engage a single wafer 818. An arm driver 978 is connected to the articulated arm 974, and has one or more motors for driving the arm segments, as controlled by the controller 872.

(Nelson, col. 17, ll. 56-62.)

7. Nelson's articulated arm 974 has joints that appear to be capable of rotational movement in at least one plane. (*See* Nelson, figs. 32, 34, 36.)

8. Nelson also states:

Referring to FIGS. 24A-24E, the process robot 66 has an elbow joint 256 and a wrist joint 262, joined by a single segment or forearm 260. Consequently, in contrast to earlier known systems having shoulder, elbow and wrist joints, joined by two arm segments, the process robot 66 achieves a range of vertical reach via movement of the robot arm 255 on the lift rail 254, rather than by articulation of arm segments.

(Nelson, col. 11, ll. 44-51.)

9. Nelson's robot arm 255 travels linearly on the lift rail 254. (*See* Nelson, figs. 23, 24A-24E.)

10. Nelson discloses "an engager actuator 912 which moves the engager plate 910 longitudinally, i.e., in a direction from the front wall 806 [of the semiconductor processing system enclosure] to the back wall 810, and perpendicular to those walls." (Nelson, col. 17, ll. 16-18; *see id.*, col. 15, ll. 1-5 (identifying the enclosure).) Nelson does not describe the engager actuator 912 as "articulated."

PRINCIPLES OF LAW

The second paragraph of 35 U.S.C. § 112 states:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

The primary purpose of this provision is to provide notice to the public of the metes and bounds of the claimed invention. *See In re Hammack*, 427

F.2d 1378, 1382 (CCPA 1970). A single claim combining two separate statutory classes of invention is indefinite, and is properly rejected under 35 USC § 112, second paragraph, for failing to particularly point out and distinctly claim the invention. *See IPXL Holdings, L.L.C. v. Amazon.com, Inc.*, 430 F.3d 1377, 1384 (Fed. Cir. 2005); *Ex parte Lyell*, 17 USPQ2d 1548, 1550-51 (BPAI 1990).

We determine the scope of the claims in patent applications by giving the claims “their broadest reasonable interpretation consistent with the specification” and by reading the claim language “in light of the specification as it would be interpreted by one of ordinary skill in the art.” *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004) (citations omitted). We must be careful not to read a particular embodiment appearing in the written description into the claim if the claim language is broader than the embodiment. *See SuperGuide Corp. v. DirecTV Enterprises, Inc.*, 358 F.3d 870, 875 (Fed. Cir. 2004).

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of Cal.*, 814 F.2d 628, 631 (Fed. Cir. 1987) (citations omitted).

ANALYSIS

The Rejection of Claims 1-46 under 35 U.S.C. § 112, Second Paragraph, as Being Indefinite Because of the Phrase “container containing objects positioned therein from the first process”

The Examiner rejected claims 1-46 under the second paragraph of § 112. (Final Rej. 2.) The Examiner concluded that the phrase “container containing objects positioned therein from the first process” in independent

claims 1, 2, 12, 13, 24, 25, 35, and 36 renders the claims indefinite. (*Id.*; *see also* Ans. 3.) We understand the remaining claims, which depend from one of these independent claims, to also stand rejected as indefinite for the same reason. Appellants state that “[t]his ground of rejection is not addressed in the present Appeal.” (App. Br. 9; Reply Br. 3.) Accordingly, we summarily affirm the rejection of claims 1-46 under 35 U.S.C. § 112, second paragraph, as being indefinite.

The Rejection of Claims 1, 2, 12, and 13 under 35 U.S.C. § 112, Second Paragraph, as Being Indefinite for Reciting Process Steps Within Apparatus Claims

Appellants argue the rejected claims as a group. (App. Br. 15; Reply Br. 5.) We select claim 1 as the representative claim, and claims 2, 12, and 13 stand or fall with claim 1. 37 C.F.R. § 41.37(c)(1)(vii) (2008).

Claim 1 recites a system comprising “a first robot having an articulated arm and a hand ..., said hand holding and taking out a container ... and conveying and positioning the held container using said arm ... and a second robot holding and taking out an object ... and conveying the held object ...” Appellants argue that phrases such as “taking out” and “conveying and positioning” constitute permissible functional language rather than process steps. (Reply Br. 5; *see also* App. Br. 15.)

Functional language defines something by what it does rather than by what it is. *In re Swinehart*, 439 F.2d 210, 212 (CCPA 1971). As Appellants correctly note (Reply Br. 6), there is nothing intrinsically wrong with defining a feature of a claimed invention using functional language. *Swinehart*, 439 F.2d at 212. However, Appellants’ claim 1 does not clearly recite structure for performing certain functions, but rather can be interpreted

as purporting to require the actual performance of the recited acts. It is unclear as to whether infringement of claim 1 would occur when, for example, one creates a system having, *inter alia*, a first robot capable of holding and taking out a container, or whether infringement would occur when the robot actually performs the acts of holding and taking out a container. Thus, claim 1 fails to apprise a person of ordinary skill in the art of its scope, and is invalid under the second paragraph of § 112. *See IPXL Holdings, L.L.C.*, 430 F.3d at 1383-1384. Accordingly we sustain the rejection of claim 1 as indefinite, as well as the rejection of claims 2, 12, and 13, which fall with claim 1.

The Rejection of Claims 1-46 under 35 U.S.C. § 102(b) as Being Anticipated by Nelson

As mentioned above, independent claim 1 recites “a first robot having an articulated arm.” Appellants disagree with the Examiner’s conclusion that Nelson’s engager actuator is “an articulated arm” when that phrase is given its broadest reasonable interpretation. (Ans. 10; Reply Br. 4.)

Appellants and the Examiner appear to be in agreement that, given their respective ordinary meanings, “arm” refers to a part similar to a human arm, and “articulated” means that the part has a joint or joints. (*See* App. Br. 13; Ans. 9; Reply Br. 4; *see also* Facts 1, 2.) The disagreement concerns the types of joints encompassed by the claim phrase. The Examiner concluded that “[a]n arm having a telescoping or sliding joint, like [Nelson’s engager actuator 912]” is “an articulated arm.” (Ans. 10.) Appellants contend that a joint in “an articulated arm” is “a joint similar to [that in] a human arm” and is capable of pivotal movement. (App. Br. 13-14; Reply Br. 4.) Appellants

argue that Nelson's actuator is capable of only longitudinal movement, and thus is not articulated. (*Id.*)

Appellants' Specification is of little help in construing "an articulated arm." The Specification contains a passing reference to "an articulated robot" shown in figure 2. (Fact 4.) The Specification refers to that figure as depicting "a first embodiment" of Appellants' invention. (Facts 2, 3.) Appellants contend that figures 1 and 5 also show the articulated arm. (App. Br. 13.) The Specification describes those two figures as also depicting embodiments of the invention. (Fact 5.) Appellants' have not expressed a clear intent for the claims and the embodiments depicted in the figures of the Specification to be strictly coextensive, and we decline to construe the claims as limited to those embodiments. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1323 (Fed. Cir. 2005) (en banc); *SuperGuide Corp.*, 358 F.3d at 875. Likewise, we decline to limit articulated joints to human-like joints absent persuasive evidence that one of ordinary skill in the robot arts would have such an understanding. *See In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d at 1364.

Next we turn to the Nelson reference for some indication as to the understanding of the phrase "articulated arm" to one of ordinary skill in the robot arts. *See Phillips*, 415 F.3d at 1317 (prior art cited during prosecution is intrinsic evidence for claim construction purposes). Nelson discloses a robot arm 974 having joints that appear to be capable of rotational movement, and refers to that arm as an "articulated arm." (Facts 6, 7.) However, Nelson does not refer to the engager actuator 912 as articulated. (Fact 10.) Further, Nelson contrasts linear movement with articulation. (Facts 8, 9.) Based on the limited evidence before us concerning the

meaning of “articulated arm” in the robot arts, we conclude that the phrase does not encompass a structure that is capable of only linear movement.

Nelson describes the engager actuator 912 as moving longitudinally. (Fact 10.) As such, based on a preponderance of the evidence, we do not find that Nelson’s engager actuator is an articulated arm as claimed. The Examiner does not identify any other structure in Nelson as corresponding to Appellants’ claimed first robot having an articulated arm. Thus, the Examiner has failed to make a *prima facie* showing of anticipation, and we cannot sustain the rejection of claim 1.

Independent system claims 2, 12, and 13 also recite “a first robot having an articulated arm.” Independent method claims 24, 25, 35, and 36 recite “using a first robot having an articulated arm.” The remaining claims on appeal depend from one of the independent claims. Accordingly, for the reasons discussed with respect to claim 1, we also cannot sustain the rejection of claims 2-46 as anticipated by Nelson. This disposes of all of the claims subject to the anticipation rejection. Thus, we do not reach Appellants’ additional argument that claims 6, 17, 29, and 40 are not anticipated because Nelson fails to disclose a recited signal (App. Br. 14; Reply Br. 4-5).

CONCLUSIONS

As Appellants do not address the rejection of claims 1-46 under 35 U.S.C. § 112, second paragraph, as being indefinite because of the phrase “container containing objects positioned therein from the first process,” we summarily affirm that rejection.

We conclude that the system claims 1, 2, 12, and 13 contain process limitations that render those claims indefinite. Therefore, the Appellants have failed to show that the Examiner erred in rejecting those claims under 35 U.S.C. § 112, second paragraph.

We further conclude that an actuator that moves only longitudinally is not encompassed within the scope of an “articulated arm” as claimed. Therefore, the Appellants have shown that the Examiner erred in rejecting claims 1-46 as anticipated by Nelson.

DECISION

The decision of the Examiner to reject claims 1-46 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv) (2007).

AFFIRMED

mls

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